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THIS NOTICE INFORMS RECIPIENTS THAT THE DOCUMENT IDENTIFIED BY THE NUMBER (AND REVISION LETTER) SHOWN IN BLOCK 4 HAS BEEN CHANGED. THE PAGES CHANGED BY THIS SCN BEING THOSE FURNISHED HEREWITH AND CARRYING THE SAME DATE AS THIS SCN. THE PAGES OF THE PAGE NUMBERS AND DATES LISTED BELOW IN THE SUMMARY OF CHANGED PAGES COMBINED WITH NON–LISTED PAGES OF THE ORIGINAL ISSUE OF THE REVISION SHOWN IN BLOCK 4 CONSTITUTE THE CURRENT VERSION OF THIS SPECIFICATION.

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	Order of SCN Incorporation SCN 001, 002, 004			

16. Technical Concurrence

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                                        Date

* "S" indicates supersedes earlier page. "A" indicates added page.

International Ground System Specification Document

International Space Station Program

APRIL 26, 1996
Incorporates SCN 004

Russian Space Agency

esa
european space agency

Canadian Space Agency

Agence spatiale canadienne

agenzia spaziale italiana
(Italian Space Agency)

NASDA
宇宙開発事業団

National Aeronautics and Space Administration
International Space Station Program
Johnson Space Center
Houston, Texas

REVISION AND HISTORY PAGE

REV.	DESCRIPTION	PUB. DATE
–	Initial Release per SSCD 000319, EFF. 09–06–96	09–30–96
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F3.1.5.2.9 MBF to SSTF internal interface description.

The MBF to SSTF interface provides the SSTF with flight software products to support training. This interface is defined in ICD SSP 50085.

F3.1.5.2.10 MBF to PSIV internal interface description.

The MBF to PSIV interface provides the MBF with payload related flight products to support station flight load builds and final station data files generation. This interface also provides the PSIV with system configuration products and data to support payload software integration testing. This interface is defined in ICD SSP 50045.

F3.1.5.2.11 PSIV to PTC internal interface description.

The PSIV to PTC interface provides the PTC with payload flight data products to support flight crew training. This interface is defined in ICD SSP 50086.

F3.1.5.2.12 PSIV to PICF internal interface description.

The PSIV to PICF interface provides the PICF with payload flight data products. This interface is defined in ICD SSP 50087.

F3.1.5.2.13 PSIV to IPS internal interface description.

The PSIV to IPS interface provides payload procedures to the integrated planning system for development of integrated on–board procedures. This interface is defined in ICD SSP 50043.

F3.1.5.2.14 PDSS to PTC internal interface description.

The PDSS to PTC interface provides simulated payload training health and status data for operations training. This interface is defined in ICD SSP 50088.

F3.1.6 Government Furnished Material.

NA

F3.2 Characteristics.

F3.2.1 Performance characteristics.

F3.2.1.1 Perform ground mission operations.

F3.2.1.1.1 Space Station system performance analysis.

The purpose of this capability is to perform the analyses necessary to support the ISS.

A.   The USGS shall provide the capability to analyze on–orbit and ground systems performance to determine if these systems are performing within expected operational limits and design characteristics.

B.   The USGS shall provide the capability to manage the configuration, resources, maintenance and inventory of the ISS system to ensure on–board resources are utilized according to the defined plans.

C.   The USGS shall provide the capability to support both manual and automatic detection, isolation, and recovery of on–orbit systems faults.

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F3.2.1.1.2 Support on–orbit operations.

The purpose of this capability is to support on–orbit operations of ISS systems and payloads.

A.   The USGS shall provide the capability to monitor the status and performance of on–orbit systems and user payloads during execution of on–orbit operations and evaluate the success of the operations with respect to defined plans.

B.   The USGS shall provide the capability to execute planned and alternative on–orbit and ground operations.

C.   The USGS shall have the capability to coordinate on–orbit ISS and user payload command and control operations.

D.   The USGS shall have the capability to coordinate station and user payload ground operations activities.

E.   The USGS shall provide the capability to control access to, configure, and coordinate utilization of uplink and downlink communications between the on–orbit Space Station and the ground.

F3.2.1.2 Support on–orbit–ground communications.

F3.2.1.2.1 Provide data for uplink.

A.   The USGS shall provide for the acquisition, transfer, preparation, and transmission in accordance with SSP 42018 of data intended for uplink from sources internal and external to the USGS.

B.   The audio and system data shall be transmitted to the USOS in accordance with SSP 42105 and SSP 41154.

C.   The ground audio distribution segment shall meet a DRT score of 95% and DAM score of 62% as measured in accordance with ANSI–S3.2–1989.

D.   The USGS shall maintain data quality, as measured by Bit Error Rate, of less than or equal to 1×10^{-8} for system data transmitted to the USOS.

F3.2.1.2.2 Support down linked data.

A.   The USGS shall support the receipt, preparation, recording, archival, playback, conversion, and distribution of down linked data received in conformance with SSP 42018 from the Ground Communications System external interface.

B.   The USGS shall receive video, audio, high rate data and system data from the USOS in accordance with SSP 42104, SSP 42105, SSP 41158 and SSP 41154.

C.   The ground audio distribution segment shall meet a DRT score of 95% and DAM score of 62% as measured in accordance with ANSI–S3.2–1989.

D.   The USGS shall maintain data quality, as measured by Bit Error Rate, of less than or equal to 1×10^{-8} for system data and high rate data received from the USOS.

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F3.2.1.3 Prepare and conduct training.

F3.2.1.3.1 Perform crew training.

The purpose of this capability is to train the crew to perform tasks in support of on–orbit, operation of the space station and payloads.

The USGS shall support the preparation and conduct of crew training. Crew training will include basic, advanced, increment specific and proficiency training in ISS and payload operations.

F3.2.1.3.2 Perform controller training.

The purpose of this capability is to train controllers to perform ground tasks in support of on–orbit operation of the space station and payloads.

The USGS shall support the preparation and conduct of controller training. Controller training will include advanced, increment specific and proficiency training.

F3.2.1.3.3 Perform instructor training.

The purpose of this capability is to train instructors to train the crew and controllers in support of on–orbit operation of the space station and payloads.

The USGS shall support the preparation and conduct of instructor training. Instructor training will consist of technical subject matter, facility competency, and the planning and conduct of training.

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F3.2.1.4 Perform increment planning.

F3.2.1.4.1 Perform resupply/return planning.

The purpose of this capability is to provide for development of resupply/return plans and plan updates in support of payload, system, and flight crew cargo items.

A.   The USGS shall support development of resupply/return plans for system, payloads, and flight crew cargo items needed for increment operations.

B.   During prelaunch integration of cargo items into the launch package, the USGS shall provide for updates to the increment resupply/return plans caused by changes in on–orbit mission equipment deemed essential for mission success.

F3.2.1.4.2 Develop increment operations planning products.

The purpose of this capability is to provide for development of tactical assessments, and increment plans for on–orbit/ground station and payload operations plans, and integration of payload and station operations plans during the pre–increment time frame.

The USGS shall support development of the increment operations planning products for the Space Station.

F3.2.1.4.3 Develop weekly planning products.

The purpose of this capability is to provide for development of station and payload operations planning products required to support real–time on–orbit/ground operations.

The USGS shall provide for development of the weekly integrated plan for the payloads and the on–orbit/ground station operations. Weekly planning products provide the execution details of the scheduled systems and payloads activities.

F3.2.1.4.4 Perform real–time planning support.

The purpose of this capability is to provide for real–time planning of user payload, station, and integrated operations in support of real–time operations.

The USGS shall provide for development of real–time planning products based on user, crew, and controller requirements. Real–time planning support is the process, performed on a continuous basis throughout an increment, through which changes to planning products are assessed and implemented during execution.

F3.2.1.5 Develop and maintain procedures.

F3.2.1.5.1 Develop preliminary procedures.

The purpose of this capability is to develop procedures necessary to operate the Space Station.

The USGS shall provide the capability to develop on–orbit automated procedures, and on–orbit manual procedures.

F3.2.1.5.2 Maintain final procedures.

The purpose of this capability is to store procedures developed to operate the Space Station.

A.   The USGS shall provide the capability to store and maintain configuration of validated final on–orbit automated procedures, on–orbit manual procedures, and supporting data.

B.   The USGS shall support procedures and data retrieval for revision, production of physical products (manuals, etc.) or transmission through the data network to users.

F3.2.1.5.3 Deliver final procedures.

The purpose of this capability is to deliver procedures developed to operate the Space Station.

The USGS shall provide the capability to deliver final physical and electronic on–orbit automated procedures, and on–orbit manual procedure products.

F3.2.1.6 Integrate reconfiguration products.

F3.2.1.6.1 Provide reconfiguration products and data files.

The USGS shall support the build and management of reconfiguration products and data.

F3.2.1.6.2 Verify reconfiguration products.

The USGS shall support the verification of reconfiguration products.

F3.2.1.7 Support prelaunch and post–landing operations.

F3.2.1.7.1 Load and unload cargo items.

A.   The space station GS shall be capable of loading and unloading launch packages for transport to orbit and return complement following landing.

B.   The space station ground system shall support loading of cargo up until 80 hours prior to launch and unloading of cargo later than 4 days after landing.

F3.2.1.7.2 Provide ground–based payload physical integration.

The USGS shall provide the capability to physically integrate payloads into program approved carriers.

F3.2.1.7.3 Support system checkout and monitoring.

The space station ground system shall be capable of checking out and monitoring launch packages for transport to orbit and return complement following landing.

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F3.2.1.7.4 Provide ground–based interface checkout for payloads.

The USGS shall provide the capability to perform interface checkout of payloads with on–orbit space station and ground command and control capabilities.

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F3.2.2 Physical characteristics.

F3.2.3 Reliability.

Reliability requirements for the USGS are defined at the end item level in each of the detailed end item specifications.

F3.2.4 Reserved.

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F3.2.5 Availability.

Availability requirements for the USGS are defined at the end item level in each of the detailed end item specifications.

F3.2.6 Environmental conditions.

A.   Facilities shall withstand local environment conditions in accordance with applicable local, state, and federal codes.

B.   Ground equipment for outdoor use, shall withstand the local environment condition.

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F3.2.7 Transportability.

NA

F3.3 Design and construction.

NA

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F3.3.1 Materials, processes and parts.

NA

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F3.3.1.1 Toxic products and formulations.

NA

F3.3.2 Electromagnetic radiation.

NA

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F3.3.3 Nameplates and product marking.

NA

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F3.3.4 Workmanship.

NA

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F3.3.5 Interchangeability.

NA

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F3.3.6 Safety.

F3.3.6.1 Ground equipment.

The NASA site specific safety and environmental health requirements documents (e.g. JSCM 1700.D at NASA JSC; MM1700.4C at NASA MSFC; KHB 1700.7B at NASA KSC) and the federal, state and local codes, standards and regulations as cited therein, shall govern the designs, installations, inspections and operations of any and all USGS ground equipment to be used at any NASA site. For contractors and suppliers, these NASA safety manuals are made applicable through contract clauses in conformance with the NASA Procurement Regulations (e.g. Part 1, Subpart 52, and Part 14, Subpart 6), and as cited in each of the USGS end item specifications. The requirements shall be uniquely defined in each of the detailed end item specifications.

F3.3.6.2 Ground facilities.

The Space Station facilities, facility equipment, and facilities ground equipment, designs, installations, inspections, and operations will be in accordance with all the applicable site specific NASA governing documents, as well as the federal, state, and local codes, standards,

and regulations as cited within those NASA documents, and will be defined in each of the end item specifications.

F3.3.7 Reserved.

F3.3.8 Reserved.

F3.3.9 System security.

A.   The space station shall support privacy for audio communications on the uplink/downlink.

B.   The space station shall provide protection for uplinked commands to prevent unauthorized third party control of the on–orbit station.

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F3.4 Computer resource requirements.

NA

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F3.5 Logistics.

NA

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F3.5.1 Maintenance.

A.   The design goal for the return of ground based systems to an operational capability shall be by the removal and replacement of LRUs from their installed locations.

B.   When LRU removal and replacement is not applicable, end item functionality may be restored by in–situ maintenance.

C.   USGS preventive maintenance shall be permitted to retain ground system functionality.

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F3.6 Personnel and training.

F3.6.1 Personnel.

NA

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F3.6.2 Training.

The USGS shall provide mockups, part task trainers, full task trainers, simulators, printed material, video media and other training aids to ensure that equipment operators and crew personnel have the required skills to operate and maintain the ISS.

F3.7 Characteristics of major functional elements.

F3.7.1 Space Station Control Center (SSCC).

F3.7.1.1 Purpose.

The role of the SSCC is to provide the exclusive command and control authority for the overall safe operation of the station. The SSCC will provide activity planning, procedure development, logistics support, systems modeling and resource utilization monitoring and maneuver planning.

F3.7.1.2 Description.

The SSCC is part of the Mission Control Center–Houston at the Johnson Space Center. The Flight Control Rooms (FCR) provide a central operational center for key managers and flight controllers. Multi–purpose Support Rooms (MPSR) provide additional capacity for system experts to support the mission. Communication interfaces provide connectivity to the TDRSS ground terminal for Station space–ground data links and ground–ground interfaces are provided to the POIC, IPs, RSA, training facilities and other required locations. SSCC data systems provide processing of uplink commands and downlink telemetry, provide recording, archive and retrieval, and provide for Space–Ground and Ground–Ground voice and video. Expert systems are provided to allow the flight controller control and monitor capabilities and to automate functions.

F3.7.1.3 Space Station system performance analysis.

F3.7.1.3.1 Analyze operations performance.

A.   The SSCC shall provide the capability to analyze the performance of on–orbit operations relative to predetermined limits and expected performance.

B.   The SSCC shall provide the capability to trend on–orbit operations performance data.

C.   The SSCC shall provide the capability to track anomalies, determine causes and support development of recommendations for restoring systems to expected performance.

F3.7.1.3.2 Manage station configuration.

A.   The SSCC shall maintain the on–orbit hardware and software configuration status and history.

B.   The SSCC shall support CM of the manned base, on–board configuration products and maintain a complete and updated status of the on–board software and data configuration.

F3.7.1.3.3 Manage station resources.

The SSCC shall provide the capability to manage on–orbit station resources.

F3.7.1.3.4 Manage station maintenance.

The SSCC shall provide the capability to manage maintenance of the on–orbit station.

F3.7.1.3.5 Manage station inventory.

The SSCC shall provide the capability to track and coordinate on–orbit station inventory.

F3.7.1.4 Support on–orbit operations.

F3.7.1.4.1 Monitor and assess station system operations.

A.   The SSCC shall provide the capability to monitor and display the operational status and performance of the Station systems.

B.   The SSCC shall provide the capability to compare on–orbit station operations with projected performance.

C.   The SSCC shall provide the capability to determine the planned and alternative operations to be performed.

D.   The SSCC shall monitor and control space station on–board safety inhibits (interlocks) of operations determined to be hazardous.

E.   The SSCC shall provide the capability for real–time dedicated displays of robotic systems status, kinematic graphic visualizations, and video images.

F3.7.1.4.2 Execute on–orbit station operations.

A.   The SSCC shall provide the capability to command on–orbit ISS operations.

B.   The SSCC shall provide for the generation of commands and data tables for uplink to the on–orbit ISS in accordance with ICD SSP 41154.

C.   The SSCC shall provide for audio communications between flight crew and ground controller personnel in support of on–orbit ISS operations in accordance with ICD SSP 42105.

D.   The SSCC shall provide for the processing of downlink data from the on–orbit ISS in accordance with ICD SSP 41154.

E.   The SSCC video function shall support processing of the Ku–band video data downlink in accordance with ICD SSP 42104.

F.   The SSCC shall monitor the status of and detect failures in operating hardware and software components used to create, access, enable and uplink commands to the on–orbit ISS, and issue error messages to the operator when errors are detected.

G.   SSCC software shall perform error detection checks when a command is retrieved from internal or external storage to verify that no data corruption has occurred.

H.   The SSCC shall alert operators when "safed" commands are presented for uplink and shall allow operators to manually "unsafe" the command to enable uplink.

I.   The SSCC command processing shall ensure that a command cannot be uplinked while "safed".

J.   The SSCC shall accommodate international partners (IP) in commanding of the partner on–orbit elements, the return of associated telemetry, and the coordination of IP planning, training, simulation audio and video, software loads and procedure data.

F3.7.1.4.3 Execute ground operations.

A.   The SSCC shall provide the ground–to–ground audio communications required to support ground operations coordination for on–orbit station operations.

B.   The SSCC shall provide the capability to schedule and control ground systems and communications systems supporting on–orbit ISS operations.

C.   The SSCC shall provide the capability to receive, manipulate, and process trajectory data to determine the orbit for three (3) vehicles being tracked in support of the Space Station operations.

D.   The SSCC video function shall support ground–to–ground video teleconferencing.

E.   The SSCC shall provide private communications and mechanisms to prevent unauthorized access to ISS voice communications.

F.   The SSCC shall provide ground–to–ground audio communications required to coordinate the search and rescue operations in support of a CTV Assured Safe Crew Return mission for landings in regions outside the Russian Segment operations area.

F3.7.1.5 Provide data for uplink.

F3.7.1.5.1 Acquire data for uplink.

A.   The SSCC shall provide for the acquisition of data intended for uplink from sources both internal and external to the SSCC in accordance with the ICDs SSP 45001 (HOSC), SSP 45004 (CSA), SSP 45011 (ESA), SSP 45012 (NASDA), SSP 50041 (MBF) and SSP 50057 (RSA).

B.   The SSCC shall provide the capability to generate command data and initiate command uplinks for all Space Station elements as stated in ICD SSP 41154.

C.   The SSCC shall receive electronic data files in accordance with ICDs SSP 42018, 41154, 45004, 45011, 45012, 50059, 45001, 50041, and 50057.

F3.7.1.5.2 Transfer data intended for on–orbit space station.

The SSCC shall provide the capability to transfer data intended for uplink within the SSCC.

F3.7.1.5.3 Prepare data for uplink to on–orbit station.

A.   The SSCC shall prepare data for uplink to the on–orbit Space Station in accordance with ICDs SSP 41154, 42018, 42104, 42105, and 50072.

B.   The SSCC shall provide encryption of the Space Station uplink in accordance with SSP 42018.

F3.7.1.5.4 Transmit data for uplink.

A.   The SSCC shall transmit data intended for uplink to the Ground Communication System external interface in accordance with ICDs SSP 41154, 42104, 42018, 42105 and 50072.

B.   The SSCC shall provide the capability to monitor core command content and restrict core and payload command sources.

C.   The SSCC shall record the uplink commands.

D.   The SSCC shall provide command uplink metering as specified in SSP 41154.

E.   Delay between the time of command initiation at the command position and that command exiting the SSCC shall be no greater than one second for core and payload commands (after receipt by the SSCC).

F3.7.1.6 Support downlinked data.

F3.7.1.6.1 Receive downlinked data.

A.   The SSCC shall receive S–band and Ku–band data from the Ground Communications System external interface in accordance with ICDs SSP 41154, 41158, 42018, 42104, 42105 and 50072.

B.   The SSCC shall provide the capability to monitor the quality of systems and payload safety telemetry data.

F3.7.1.6.2 Prepare downlinked data for ground use.

A.   The SSCC shall provide demultiplexing and conversion of audio, systems telemetry, payload safety data, and video.

B.   The SSCC shall process Space Station core systems telemetry.

C.   The SSCC shall process Space Station payload safety data.

D.   The SSCC shall perform Engineering Unit(s) (EU) conversion.

E.   The SSCC shall make incoming telemetry data available for display at user positions within five seconds of SSCC receipt.

F3.7.1.6.3 Convert data for external ground interfaces.

The SSCC shall provide the capability for the conversion of systems telemetry, payload safety data, audio, and video data into a form compatible with external interfaces to the SSCC as specified in ICDs SSP 45001 (HOSC), SSP 45004 (CSA), SSP 45011 (ESA), SSP 45012 (NASDA), SSP 50041 (MBF) and SSP 50057 (RSA).

F3.7.1.6.4 Record downlinked data.

A.   The SSCC shall provide the capability for the recording of the S–band and Ku–band systems telemetry, payload safety data, audio, and video data.

B.   The SSCC shall record tracking data for storage and retrieval.

F3.7.1.6.5 Archive recorded flight–ground data.

The SSCC shall provide the capability to archive systems telemetry, payload safety data, audio, and video.

the interface are referred to their proper destinations; and that station controllers have access to uplink or downlink message content.

F4.3.2.1.2 Support on–orbit–ground communications.

No verification required.

F4.3.2.1.2.1 Provide data for uplink.

A.   An analysis shall be performed in conjunction with the analyses required by 4.3.2.1.1.2 above to confirm that uplink and downlink messages processed have the message content, format and transfer characteristics specified by SSP 42018.

B.   An analysis of USGS external interfaces shall be performed to confirm that audio and data intended for uplink is presented to the NASA communications system interfaces with the content, format and characteristics defined in ICDs SSP 42105 and SSP 41154. Verification shall be considered successful when it has been shown that uplink audio and data are made available to the defined interfaces in the specified forms.

C.   An analysis of the USGS uplink audio networks shall be performed in accordance with ANSI–S3.2–1989 to determine the applicable DRT and DAM scores. Verification shall be considered successful when it has been shown that the audio networks have achieved a DRT score of 95% or better and a DAM score of 62% or better.

D.   TBD.

F4.3.2.1.2.2 Support downlinked data.

A.   An analysis of the downlink data flow shall be performed to confirm that the downlinked data stream is separated into its distinct message elements and that those message elements are properly distributed to the destinations as indicated by the address identifiers. The analysis shall further confirm that all downlinked data is temporarily recorded on short term storage medium and subsequently transferred to long term archive storage. The analysis shall further confirm the capability to selectively recall data from either short or long term storage for display, hard copy, or transfer to authorized external interfaces.

B.   An analysis of USGS external interfaces shall be performed to confirm that USGA can receive video, audio, high data rate and system data in the form and content and with the characteristics defined by SSP 42104, SSP 42105, SSP 41155 and SSP 41154. Verification shall be considered successful when it has been shown that signals received either separately or simultaneously, conforming to the characteristics of the respective ICDs, will be accepted and processed by the USGS communications systems.

C.   An analysis of the USGS downlink audio networks shall be performed in accordance with ANSI–S3.2–1989 to determine the applicable DRT and DAM scores. Verification shall be

considered successful when it has been shown that the audio networks have achieved a "DRT" score of 95% or better and a "DAM" score of 62% or better.

D.   TBD.

F4.3.2.1.2.3 Provide Ground–based Payload Physical Integration.

The PICF ground–based physical integration capability for payloads shall be verified by analysis of the end item specifications and the end item activation and validation tests. The analysis shall identify those end item requirements which, in their aggregate, comprise this segment requirement. The analysis shall further confirm that the identified requirements have been verified at the end item level. Verification shall be considered successful when it has been shown that all end item requirements derived from this segment requirement have been successfully verified.

F4.3.2.1.2.4 Provide Ground–based Interface Checkout for Payloads.

The PICF ground–based interface checkout capability for payloads shall be verified by analysis of the end item specifications and the end item activation and validation tests. The analysis shall identify those end item requirements which, in their aggregate, comprise this segment requirement. The analysis shall further confirm that the identified requirements have been verified at the end item level. Verification shall be considered successful when it has been shown that all end item requirements derived from this segment requirement have been successfully verified.

F4.3.2.1.3 Prepare and conduct training.

No verification required.

F4.3.2.1.3.1 Perform crew training.

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This requirement shall be verified by analysis of the end item level specification activities performed in response to the appropriate segment 3.7 subparagraph requirements. An analysis shall be performed of the verification results for these subparagraphs to confirm that they have been successfully verified. Verification of this paragraph shall be considered successful when it has been confirmed that all of the encompassing end item requirements have been verified.

F4.3.2.1.3.2 Perform controller training.

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This requirement shall be verified by analysis of the end item level specification activities performed in response to the appropriate segment 3.7 subparagraph requirements. An analysis shall be performed of the verification results for these subparagraphs to confirm that they have been successfully verified. Verification of this paragraph shall be considered successful when it has been confirmed that all of the encompassing end item requirements have been verified.

F4.3.2.1.3.3 Perform instructor training.

This requirement shall be verified by analysis of the end item level specification activities performed in response to the appropriate segment 3.7 subparagraph requirements. An analysis shall be performed of the verification results for these subparagraphs to confirm that they have been successfully verified. Verification of this paragraph shall be considered successful when it has been confirmed that all of the encompassing end item requirements have been verified.

F4.3.2.1.4 Perform increment planning.

No verification required.

F4.3.2.1.4.1 Perform resupply/return planning.

A.   The capability to perform resupply/return planning shall be verified by analysis. This task is allocated to the Integrated Planning System (IPS). The analysis shall confirm that the associated requirements defined for this function in section 3.7.5 of this specification have been verified. Verification shall be considered successful when the associated 3.7.5.4 paragraphs and subparagraphs have been verified.

B.   The capability to perform resupply/return planning shall be verified by analysis. This task is allocated to the Integrated Planning System (IPS). The analysis shall confirm that the associated requirements defined for this function in section 3.7.5 of this specification have been verified. Verification shall be considered successful when the associated 3.7.5.4 paragraphs and subparagraphs have been verified.

F4.3.2.1.4.2 Develop increment operations planning products.

The capability to develop increment operations planning products shall be verified by analysis. This task is allocated to the Integrated Planning System (IPS) and the Payload Planning System (PPS). The analysis shall confirm that the associated requirements defined for this functions in section 3.7.5 and 3.7.6 of this specification have been verified. Verification shall be considered successful when the associated 3.7.5.5 and 3.7.6.3 paragraphs and subparagraphs have been verified.

F4.3.2.1.4.3 Develop weekly planning products.

The capability to develop weekly planning products shall be verified by analysis. This task is allocated to the Integrated Planning System (IPS) and the Payload Planning System (PPS). The analysis shall confirm that the associated requirements defined for this functions in section 3.7.5 and 3.7.6 of this specification have been verified. Verification shall be considered successful when the associated 3.7.5.6 and 3.7.6.4 paragraphs and subparagraphs have been verified.

F4.3.2.1.4.4 Perform real–time planning support.

The capability to perform real–time planning support shall be verified by analysis. This task is allocated to the Integrated Planning System (IPS) and the Payload Planning System (PPS). The analysis shall confirm that the associated requirements defined for this functions in section 3.7.5 and 3.7.6 of this specification have been verified. Verification shall be considered successful when the associated 3.7.5.7 and 3.7.6.5 paragraphs and subparagraphs have been verified.

F4.3.2.1.5 Develop and maintain procedures.

No verification required.

F4.3.2.1.5.1 Develop preliminary procedures.

This function is performed by the POIC (paragraph 3.7.2.10), the IPS (paragraph 3.7.5.8) and the SSTF (paragraph 3.7.11.6). Verification shall be performed by analysis of the verification reports of the POIC, IPS and SSTF to confirm that these functions have completed verification. Verification shall be considered successful when it has been shown that each of the facilities have successfully completed verification of the referenced paragraphs.

F4.3.2.1.5.2 Maintain final procedures.

A.   This function is performed by the POIC (paragraph 3.7.2.11) and the IPS (paragraph 3.7.5.9). Verification shall be performed by analysis of the verification reports of the POIC, and IPS to confirm that these functions have completed verification. Verification shall be considered successful when it has been shown that each of the facilities have successfully completed verification of the referenced paragraphs.

B.   This function is performed by the POIC (paragraph 3.7.2.11) and the IPS (paragraph 3.7.5.9). Verification shall be performed by analysis of the verification reports of the POIC, and IPS to confirm that these functions have completed verification. Verification shall be considered successful when it has been shown that each of the facilities have successfully completed verification of the referenced paragraphs.

F4.3.2.1.5.3 Deliver final procedures.

This function is performed by the POIC (paragraph 3.7.2.12) and the IPS (paragraph 3.7.5.10). Verification shall be performed by analysis of the verification reports of the POIC, and IPS to confirm that these functions have completed verification. Verification shall be considered successful when it has been shown that each of the facilities have successfully completed verification of the referenced paragraphs.

F4.3.2.1.6 Integrate reconfiguration products.

No verification required.

F4.3.2.1.6.1 Provide reconfiguration products and data files.

The provisioning of reconfiguration products is allocated to the MBF (paragraph 3.7.7.3) and the PSIV (paragraph 3.7.8.3). Verification of the requirement shall be performed by analyses of the verification reports of the MBF and PSIV to confirm that the allocated requirements have been verified. Verification shall be considered successful when it has been shown that paragraphs 3.7.7.3 and 3.7.8.3 have been successfully verified.

F4.3.2.1.6.2 Verify reconfiguration products.

The verification of reconfiguration products function has been allocated to the PSIV (paragraph 3.7.8.4) and the SSTF (paragraph 3.7.11.7). Verification of the requirement shall be performed by analyses of the verification reports of the PSIV and the SSTF to confirm that the allocated requirements have been verified. Verification shall be considered successful when it has been shown that paragraphs 3.7.8.4 and 3.7.11.7 have been successfully verified.

F4.3.2.1.7 Support prelaunch and post–landing operations.

F4.3.2.1.7.1 Load and unload cargo items.

A.   Reference 4.3.1

B.   Reference 4.3.1

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F4.3.2.2 Physical characteristics.

No verification required.

F4.3.2.3 Reliability.

Segment level verification not required..

F4.3.2.4 Maintainability.

Segment level verification not required..

F4.3.2.5 Availability.

Segment level verification not required..

F4.3.2.6 Environmental conditions.

A.   No verification required.

B.   No verification required.

F4.3.2.7 Transportability.

NA

F4.3.3 Design and construction.

No verification required.

F4.3.3.1 Materials, processes, and parts.

Segment level verification not required.

F4.3.3.1.1 Toxic products and formulations.

NA

F4.3.3.2 Electromagnetic radiation.

Segment level verification not required.

F4.3.3.3 Nameplates and product marking.

Segment level verification not required.

F4.3.3.4 Workmanship.

Segment level verification not required.

F4.3.3.5 Interchangeability.

Segment level verification not required.

F4.3.3.6 Safety.

No verification required.

F4.3.3.6.1 Ground equipment.

Segment level verification not required.